

## WHAT IS CLAIMED IS:

1. A thermal processing susceptor holding a substrate subjected to thermal processing, comprising:

5 a flat receiving surface having a region larger than the planar size of said substrate; and

a tapered surface annularly enclosing the peripheral edge of said receiving surface for specifying said receiving surface, wherein

10 the lower end of said tapered surface is concatenated to said peripheral edge of said receiving surface and said tapered surface is formed to upwardly broaden while the gradient of said tapered surface with respect to said receiving surface is at least 5° and less than 30°.

2. The thermal processing susceptor according to claim 1, wherein

15 the average surface roughness of said tapered surface is not more than 1.6  $\mu\text{m}$ .

3. A thermal processing susceptor holding a substrate subjected to thermal processing, comprising a cavity storing said substrate in thermal processing, wherein

20 said cavity has a flat bottom surface and an inclined surface annularly enclosing the peripheral edge of said bottom surface, and

the gradient of said inclined surface with respect to said bottom surface is at least 5° and less than 30°.

4. The thermal processing susceptor according to claim 3, wherein

25 the average surface roughness of said inclined surface is not more than 1.6  $\mu\text{m}$ .

5. A thermal processing apparatus irradiating a substrate with light thereby heating said substrate, comprising:

a light source having a plurality of lamps;

5 a chamber, provided under said light source, comprising a chamber window transmitting light emitted from said light source on its upper portion; and

a holding element substantially horizontally holding said substrate in said chamber, wherein

said holding element has a thermal processing susceptor comprising:

10 a flat receiving surface having a region larger than the planar size of said substrate, and

a tapered surface annularly enclosing the peripheral edge of said receiving surface for specifying said receiving surface, and

the lower end of said tapered surface is concatenated to said peripheral edge of  
15 said receiving surface and said tapered surface is formed to upwardly broaden while the gradient of said tapered surface with respect to said receiving surface is at least 5° and less than 30°.

6. The thermal processing apparatus according to claim 5, wherein

20 the average surface roughness of said tapered surface is not more than 1.6 μm.

7. The thermal processing apparatus according to claim 6, wherein

each of said plurality of lamps is a xenon flash lamp, and

said holding element further has an assistive heater preheating held said  
25 substrate.

8. A thermal processing susceptor holding a substrate subjected to thermal processing, comprising:

5 a flat receiving surface having a region larger than the planar size of said substrate;

a first tapered surface annularly enclosing the peripheral edge of said receiving surface for specifying said receiving surface; and

a second tapered surface annularly enclosing the peripheral edge of said first tapered surface, wherein

10 the lower end of said first tapered surface is concatenated to said peripheral edge of said receiving surface and the lower end of said second tapered surface is concatenated to the upper end of said first tapered surface while said first tapered surface is formed to upwardly broaden, an opening specified by the upper end of said second tapered surface is wider than said receiving surface, and the gradient of said second tapered surface with respect to said receiving surface is larger than the gradient of said first tapered surface.

9. The thermal processing susceptor according to claim 8, wherein  
20 the gradient of said first tapered surface with respect to said receiving surface is at least 5° and less than 30°.

10. The thermal processing susceptor according to claim 9, wherein  
the average surface roughness of said first tapered surface is not more than 1.6  
μm.

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11. The thermal processing susceptor according to claim 10, wherein  
the gradient of said second tapered surface with respect to said receiving  
surface is at least 45° and not more than 90°.

5 12. A thermal processing apparatus irradiating a substrate with light thereby  
heating said substrate, comprising:

a light source having a plurality of lamps;

a chamber, provided under said light source, comprising a chamber window  
transmitting light emitted from said light source on its upper portion; and

10 a holding element substantially horizontally holding said substrate in said  
chamber, wherein

said holding element has a thermal processing susceptor comprising:

a flat receiving surface having a region larger than the planar size of said  
substrate,

15 a first tapered surface annularly enclosing the peripheral edge of said receiving  
surface for specifying said receiving surface, and

a second tapered surface annularly enclosing the peripheral edge of said first  
tapered surface, and

the lower end of said first tapered surface is concatenated to said peripheral  
20 edge of said receiving surface and the lower end of said second tapered surface is  
concatenated to the upper end of said first tapered surface while said first tapered surface  
is formed to upwardly broaden, an opening specified by the upper end of said second  
tapered surface is wider than said receiving surface, and the gradient of said second  
tapered surface with respect to said receiving surface is larger than the gradient of said  
25 first tapered surface.

13. The thermal processing apparatus according to claim 12, wherein  
each of said plurality of lamps is a xenon flash lamp, and  
said holding element further has an assistive heater preheating held said  
5 substrate.

14. A thermal processing susceptor receiving a substrate subjected to thermal  
processing, comprising:  
a flat receiving surface having a region larger than the planar size of said  
10 substrate; and  
a tapered surface annularly enclosing the peripheral edge of said receiving  
surface for specifying said receiving surface, wherein  
the lower end of said tapered surface is concatenated to said peripheral edge of  
said receiving surface while said tapered surface is formed to upwardly broaden, and  
15 said tapered surface has such a gradient that an end of said substrate slides up  
along said tapered surface when said substrate thermally expands while said end is in  
contact with said tapered surface.

15. The thermal processing susceptor according to claim 14, wherein  
20 only the surface of said substrate expands and convexly warps when said  
substrate thermally expands.

16. A thermal processing susceptor receiving a substrate subjected to thermal  
processing, comprising:  
25 a flat receiving surface having a region larger than the planar size of said

substrate; and

a tapered surface annularly enclosing the peripheral edge of said receiving surface for specifying said receiving surface, wherein

the lower end of said tapered surface is concatenated to said peripheral edge of  
5 said receiving surface while said tapered surface is formed to upwardly broaden, and

said tapered surface has such a gradient that an end of said substrate slides up  
along said tapered surface without restricting thermal expansion of said substrate when  
said substrate received on said receiving surface thermally expands and said end comes  
into contact with said tapered surface.